

WHAT IS CLAIMED IS:

1. An image forming apparatus that forms an electrostatic latent image on an image carrier,  
5 comprising:

a charging unit for charging the image carrier;  
a charge voltage loading unit for applying charge voltage to the charging unit;

10 an exposure unit for exposing the image carrier charged by the charging unit to form an electrostatic latent image corresponding to image signals;

a development unit for forming a toner image by developing the electrostatic latent image formed on the image carrier by the image carrier;

15 an image transfer unit for continuously transferring the toner image formed by the development unit onto a plurality of recording materials; and

a control unit for controlling ac charge voltage applied by the charge voltage loading unit to the  
20 charging unit,

wherein, when the transport interval of the plural recording materials is shorter than a predetermined time the AC charge voltage applied to the image carrier during the transport interval being  
25 a first AC charge voltage, and when the transport interval is longer than the predetermined time the ac charge voltage applied to the image carrier during the

transport interval being a second AC charge voltage,

the control unit makes the current running in the charging unit to which the second charge voltage is applied lower than the current running in the charging unit to which the first AC charge voltage is applied.

2. The image forming apparatus according to claim 1, further comprising a current detection unit for detecting current running in the charging unit, wherein the control unit controls the AC charge voltage applied by the charge loading unit so that the current detected by said current detection unit is equal to a predetermined current value.

3. The image forming apparatus according to claim 2, wherein the first AC charge voltage is such a voltage that the charge voltage loading unit applies so that the predetermined current value becomes equal to a first predetermined current value, while the second AC charge voltage is such a voltage that the charge voltage loading unit applies so that the predetermined current value becomes equal to a second predetermined current value that is lower than the first predetermined current value.

4. The image forming apparatus according to claim 3, wherein said predetermined time is the sum of the time

for the first predetermined current value to step down to the second predetermined current value and the time for the second predetermined current value to step up to the first predetermined current value.

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5. The image forming apparatus according to claim 1, wherein the charge voltage loading unit applies a charge voltage where a DC charge voltage is added to the AC charge voltage so that the image carrier is charged to a predetermined potential.

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6. The image forming apparatus according to claim 5, wherein the development unit applies a predetermined voltage to the non-image formation area of the image carrier.

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7. The image forming apparatus according to claim 6, wherein the control unit controls the second ac charge voltage so that the predetermined potential becomes higher than the predetermined voltage.

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8. An image forming apparatus that forms an electrostatic latent image on an image carrier, comprising:

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a charging unit for charging the image carrier;  
a charge voltage loading unit for applying charge voltage to the charging unit;

an exposure unit for exposing the image carrier charged by the charging unit and forms an electrostatic latent image corresponding to image signals;

5 a development unit for forming a toner image by developing the electrostatic latent image formed on the image carrier by the image carrier;

an image transfer unit for continuously transferring the toner image formed by the development unit onto a plurality of recording materials;

10 a fixer unit for fixing the toner image transferred by the image transfer unit to the recording material;

a transport unit for transporting the recording material to the image transfer unit to transfer a toner image onto the other side of the recording material where a toner image has been fixed by the fixer unit; and

15 a control unit for controlling ac charge voltage applied by the charge voltage loading unit to the charging unit,

wherein, while the transport unit is not transporting the recording material the AC charge voltage being a first AC charge voltage, and while the transport unit is transporting the recording material the AC charge voltage being a second AC charge voltage,

25 the control unit makes the current running in the

charging unit to which the second charge voltage is applied lower than the current running in the charging unit to which the first AC charge voltage is applied.

5        9.    The image forming apparatus according to claim 8, further comprising a current detection unit for detecting current running in the charging unit, wherein the control unit controls the AC charge voltage applied by the charge loading unit so that the  
10       current detected by said current detection unit is equal to a predetermined current value.

15       10.   The image forming apparatus according to claim 9, wherein the first AC charge voltage is such a voltage that the charge voltage loading unit applies so that  
the predetermined current value becomes equal to a first predetermined current value, while the second AC charge voltage is such a voltage that the charge  
voltage loading unit applies so that the predetermined  
20       current value becomes equal to a second predetermined current value that is lower than the first predetermined current value.

25       11.   The image forming apparatus according to claim 8, wherein the charge voltage loading unit applies a charge voltage where a DC charge voltage is added to the AC charge voltage so that the image carrier is

charged to a predetermined potential.

12. The image forming apparatus according to claim 11,  
wherein the development unit applies a predetermined  
5 voltage to the non-image formation area of the image  
carrier.

13. The image forming apparatus according to claim 12,  
wherein the control unit controls the second AC charge  
10 voltage so that the predetermined potential becomes  
higher than the predetermined voltage.

14. An image forming apparatus that forms an  
electrostatic latent image on an image carrier,  
15 comprising:

    a charging unit for charging the image carrier;  
    a charge voltage loading unit for applying charge  
voltage to the charging unit;

    an exposure unit for exposing the image carrier  
20 charged by the charging unit and forms an  
electrostatic latent image corresponding to image  
signals;

    a development unit for forming a toner image by  
developing the electrostatic latent image formed on  
25 the image carrier by the image carrier;

    an image transfer unit for continuously  
transferring the toner image formed by the development

unit onto a plurality of recording materials;

a fixer unit for fixing the toner image transferred by the image transfer unit to the recording material;

5 a feeder unit for feeding the recording material from a recording material container where a plurality of recording materials are loaded;

a transport unit for transporting the recording material to the image transfer unit to transfer a  
10 toner image onto the other side of the recording material where a toner image has been fixed by the fixer unit;

a control unit for controlling ac charge voltage applied by the charge voltage loading unit to the  
15 charging unit; and

a memory unit for storing the image formation conditions about the plural recording materials based on the command sent from an external device,

wherein, while the transport unit is not  
20 transporting the recording material, the AC charge voltage being a first AC charge voltage, and

while the transport unit is transporting the recording material and the feeder unit is feeding the recording material subsequent to said recording  
25 material based on the image formation conditions stored in the memory unit, the AC charge voltage being a second AC charge voltage,

the control unit makes the current running in the charging unit to which the second charge voltage is applied lower than the current running in the charging unit to which the first AC charge voltage is applied.

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15. The image forming apparatus according to claim 14, wherein the control unit does not apply the AC charge voltage when the transport unit is transporting the recording material and the memory unit does not have any image formation conditions about the recording material subsequent to said recording material.

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16. The image forming apparatus according to claim 15, further comprising a driver unit for driving the image carrier and the feeder unit so that paper feeding by the feeder unit proceeds concurrently with the rotation of the image carrier.

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17. The image forming apparatus according to claim 16, wherein the driver unit does not rotate the image carrier when the transport unit is transporting the recording material and the memory unit does not have any image formation conditions about the recording material subsequent to said recording material.

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18. The image forming apparatus according to claim 14, further comprising a current detection unit for



detecting current running in the charging unit,  
wherein the control unit controls the AC charge  
voltage applied by the charge voltage loading unit so  
that the current detected by said current detection  
5 unit is equal to a predetermined current value.

19. The image forming apparatus according to claim 18,  
wherein the first AC charge voltage is such a voltage  
that the charge voltage loading unit applies so that  
10 the predetermined current value becomes equal to a  
first predetermined current value, while the second AC  
charge voltage is such a voltage that the charge  
voltage loading unit applies so that the predetermined  
current value becomes equal to a second predetermined  
15 current value that is lower than the first  
predetermined current value.

20. The image forming apparatus according to claim 14,  
wherein the charge voltage loading unit applies a  
20 charge voltage where a DC charge voltage is added to  
the AC charge voltage so that the image carrier is  
charged to a predetermined potential.

21. The image forming apparatus according to claim 20,  
25 wherein the development unit applies a predetermined  
voltage to the non-image formation area of the image  
carrier.

22. The image forming apparatus according to claim 21,  
wherein the control unit controls the second AC charge  
voltage so that the predetermined potential becomes  
5 higher than the predetermined voltage.